Schismus arabicus Nees *Schismus barbatus* (L.) Thell.

Common names: Mediterranean grass, Arabian schismus, schismus, split grass

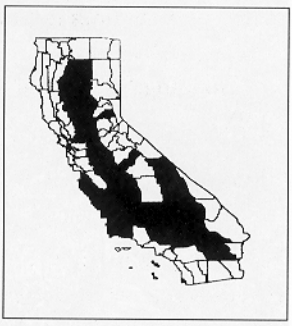
Synonymous scientific name: *Festuca barbata* (for *S. barbatus*)

Closely related California natives: 0

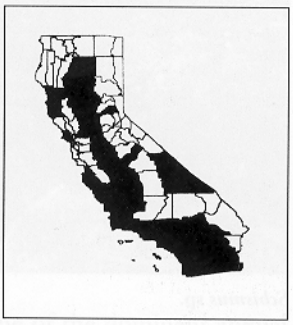
Closely related California non-natives: 0

Listed: CalEPPC B; CDFA nl

by Matthew L. Brooks



Schismus arabicus



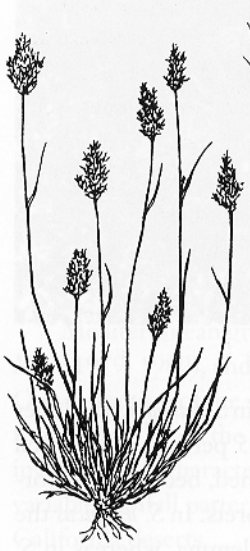
S. barbatus

HOW DO I RECOGNIZE IT?

Schismus barbatus and *S. arabicus* are so genetically and morphologically similar (Faruqui and Quarish 1979, Faruqui 1981, Bor 1968), with similar geographic ranges and habitats in California (Hickman 1993), that they are treated together here.

Distinctive Features

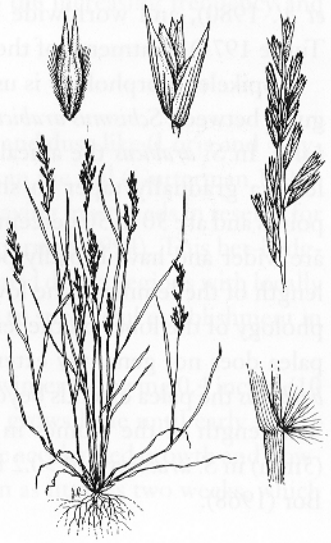
Mediterranean grass (*Schismus barbatus* or *S. arabicus)* is a small, tufted annual grass with erect or spreading, green, smooth culms to eight inches, often with brown nodes. Individual plants can remain rooted and upright for up to two years following death, but eventually detach at ground level and blow across the ground like a tumbleweed, falling apart in the process. Mediterranean grass is most common in the spaces between shrubs, often producing a carpet of green that turns purplish at maturity and fades to a light straw color soon after death.



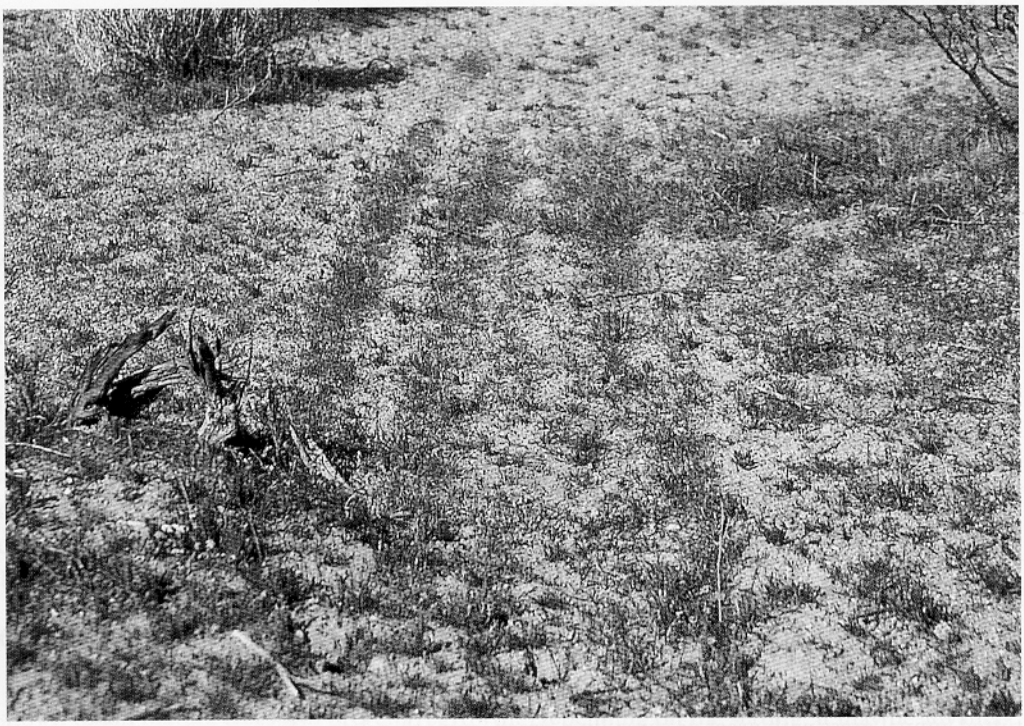
Schismus arabicus

Description

Poaceae. Annual grass with green culms that ascend or spread to 20 cm. Leaves: usually inrolled; smooth except near the orifice where there is a ring of rigid hairs to 0.1 in (3 mm); blade <0.1 in (2mm) wide, thread-like. Inflorescence: a dense, narrow panicle; rachis disarticulating above glumes and between florets; green when young, aging to purplish. Spikelets laterally compressed; 5- to 10-flowered; glumes subequal, persistent, scarious margins, lanceolate, larger than lowest lemmas, 3-5 veined; lemma 9-veined, membranous, 2-



S. barbatus



Schismus sp.

Schismus sp.

lobed apex; palea shorter or as long as lemma; awnless. Seed: roundish, translucent, loosely bounded by palea and lemma; embryo to half the length of the caryopsis. Description adapted from Californian (Hickman 1993), Eurasian (Bor 1968, Tutin *et al.* 1980), and worldwide (Conert and Turpe 1974) treatments of the species.

Spikelet morphology is used to distinguish between *Schismus arabicus* and *S. barbatus*. In *S. arabicus* the apical lobes of the lemma gradually taper to sharp, narrow points and are 30 to 50 percent of the total length of the lemma, whereas in *S. barbatus* the lobes are wider and have broadly pointed to rounded points that are 15 to 25 percent of the total length of the lemmas. The lowest floret in the spikelet should be examined, because the morphology of the lobes on the lemma becomes highly variable in higher florets. In *S. arabicus* the palea does not generally extend beyond the base of the fissure on the lemma, whereas in *S. barbatus* the palea extends beyond the base of the fissure and may be as long as the lemma lobes. The length of the glumes in the terminal spikelet of the inflorescence is generally <0.2 in (5mm) in *S. arabicus* and >0.2 in (5mm) in *S. barbatus*. These characteristics were adapted from Bor (1968).

WHERE WOULD I FIND IT?

Mediterranean grass is found below 4,250 feet (1300 m) elevation in disturbed and undisturbed areas of the central and southern coastal regions, the Central Valley, and the deserts of California. *Schismus arabicus* is generally more common in arid regions, whereas *S. barbatus* is more common in semi-arid shrublands, extending into the northern coast to Mendocino County. Mediterranean grass is most common in spaces between shrubs where it is not shaded by taller plants. It is widespread and common in the desert (Brooks 1998); its presence in coastal shrubland may not be readily apparent except on bare soil or following fire, where it can appear in great numbers.

WHERE DID IT COME FROM AND HOW DOES IT SPREAD?

Mediterranean grass is native to southern Europe, northern Africa, and the Near East (Jackson 1985) and has spread to areas of North America, South America, Australia, and the west coast of Europe where Mediterranean climate regimes occur (Bor 1968). It appears to have spread westward from Arizona into California during the early 1900s (Burgess *et al.* 1991), and was first recorded in California in 1935 (Robbins 1940). Mediterranean grass is particularly abundant where grazing, off-road-vehicle use, or construction of linear corridors has reduced shrub cover and disturbed the soil. Seeds disperse by sheet flooding and by wind and often persist within the inflorescence, detaching after it is blown across the ground for a short distance from the parent plant.

WHAT PROBLEMS DOES IT CAUSE?

Mediterranean grass rose from relative obscurity to become one of the dominant annual grasses in arid and semi-arid regions of California during the 1940s (Clarke, pers. comm.). As Mediterranean grass became more dominant, the similar native annual grass, six-weeks fescue (*Vulpia octoflora*) became less common (Clarke, pers. comm.). Mediterranean grass can compete effectively for limiting nutrients with native annual plants that occupy spaces between shrubs (Brooks 1998).

Fire is readily carried across inter-shrub spaces by the dead stems of Mediterranean grass (Brooks 1998, Brooks in press), which may have contributed to the increasing frequency and extent of fire in recent decades in California deserts.

HOW DOES IT GROW AND REPRODUCE?

Mediterranean grass reproduces by seed only. Seeds are tiny and dust-like (Loria and Noy-Meir 1979, 1980), and disperse into small cracks and depressions in the soil (Gutterman 1994). Only a fraction of the seedbank germinates during a given year, leaving most seeds in reserve for future years when the cohort may die prior to reproduction (Gutterman 1994). This bet-hedging strategy is characteristic of annual plants that have evolved in arid desert regions with locally variable rainfall patterns, and it predisposes Mediterranean grass to successful establishment in California deserts.

Mediterranean grass is a winter annual, germinating in early winter following 0.4 inches (10 mm) or more of rainfall and emerging about two weeks later. It grows little until early spring (typically March), when rainfall and higher temperatures stimulate accelerated growth and flowering. Progression from seedling to flowering stages can occur in as little as two weeks, which

makes it one of the fastest-maturing desert annuals. Plants flower from March through May, or until they die of water stress. Mediterranean grass may also germinate in summer when supplied with artificial irrigation, and it can survive with no further irrigation for up to four months (Gutterman and Evanari 1994).

Mediterranean grass is generally intolerant of shading, which may explain its association with inter-shrub spaces. However, it can thrive under perennial shrubs, particularly under south canopies or where tall-statured annual plants are less common (Brooks 1998). The root system can form an extensive mat near the surface where plant litter is present.

HOW CAN I GET RID OF IT?

Physical Control

Mechanical methods: Its small size makes hand thinning of Mediterranean grass impractical. In addition, the extensive mat of roots near the surface of the soil often results in significant disruption of the soil surface when plants are removed, which may promote further weed establishment. Plowing, disking, or scraping may initially reduce surface biomass of Mediterranean grass, but soil disturbance and reduced shading results in improved site conditions for this species.

Prescribed burning: Fire generally promotes the growth of Mediterranean grass. Its small seeds settle near or beneath ground level, where they are protected from high temperatures. Significant seed death occurs only under perennial shrubs where intense burning heats deeper into the soil. After fire has removed plant litter and taller competitors, and in some cases has increased soil nutrients, Mediterranean grass can dominate until plant litter and populations of taller annual plants become reestablished. Prescribed burning generally is counterproductive to the control of Mediterranean grass. However, if the choice is between controlling Mediterranean grass or more problematic annual weeds that may be controlled by certain fire prescriptions, then the latter should usually receive priority.

Biological Control

Insects and fungi: No USDA approved insects or fungi to be used as biocontrol agents exist for these grasses. Ants feed on the seeds of Mediterranean grass in its native range (Gutterman 1993) and in North America (Rissing 1988). Ants generally harvest seeds while they are still concentrated within the inflorescence. After dispersal the seeds spread out across the landscape and settle into small cracks in the soil, thereby hindering predation (Gutterman 1994).

A black smut, *Ustilago aegyptica*, can form on Mediterranean grass, destroying the spikelets (Gilbertson and Blackwell 1988). Natural infestations of smuts do not seem to be widespread or severe enough to significantly affect populations of Mediterranean grass in California. However, inoculation of smuts into areas of the desert could prove to be useful for short-term control of Mediterranean grass and other alien annual grasses, as long as they do not affect native perennial grasses. Especially in years of abundant rainfall, smuts may reduce the density of alien annual grasses prior to revegetation efforts. This would have to be researched and approved by the USDA and the CDFA Biological Control Program before such distribution would be permitted.

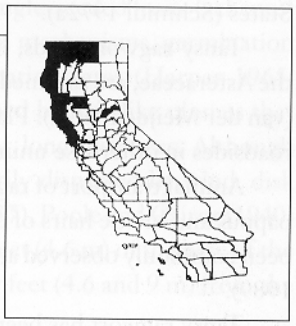
Grazing: Livestock grazing can remove biomass of Mediterranean grass. However, the relative biomass of alien annual grasses compared to native annuals tends to increase following moder-

ate to intense grazing. Mediterranean grass is particularly dominant in ephemeral sheep grazing allotments in the California desert. As with mechanical plowing, reduced shrub cover and increased soil disturbance caused by grazing ultimately improve site conditions for Mediterranean grass.

Chemical Control

Various herbicides, including glyphosate, can control Mediterranean grass, but the small surface area of the leaves and culms make application problematic. In addition, broadcast herbicides would negatively affect non-target species.

Senecio jacobaea L.



Common names: tansy ragwort, stinking willie

Synonymous scientific names: none known

Closely related California natives: 36

Closely related California non-natives: 5

Listed: CalEPPC B; CDFA B

by Steve Harris

HOW DO I RECOGNIZE IT?

Distinctive Features

Tansy ragwort (*Senecio jacobaea*) is a perennial herb in the dandelion family that sometimes reaches more than four feet in height. Numerous inch-wide, daisy-like yellow flowerheads with golden or light brown centers form at the tip of each branch from mid-summer to fall. The plant has a basal rosette of leaves, and the upper parts are branched. Leaves are deeply pinnately dissected into irregular segments, giving the plant a ragged appearance. Leaves or segments are wider than long. Ray flowers distinguish this plant from common tansy (*Tanacetum vulgare*).

Description

Compositae. Stems: from taprooted caudex, branched above, 4-50 in (10-120 cm). Leaves: evenly spaced, reduced upward; 2-8+ in (5-20+ cm), ovate, deeply 1-2-pinnately dissected; lower leaves soon deciduous. Inflorescence: heads radiate, 20-60; 13 phyllaries, 0.15-0.2 in (3-5 mm), tips green or black. Flowers: 13 ray flowers; ligules about 0.3-0.5 in (8-12 mm); 40 or more disk flowers. Fruit: glabrous or only edges of fruit hairy.

WHERE WOULD I FIND IT?

In California tansy ragwort is found on the North Coast and into the Klamath and Cascade ranges, also occurring in the Sacramento Valley and San Francisco Bay region. It is commonly found in pastures, on roadsides, and in disturbed places. It grows best in light, well drained soils,